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Response dated: 04/11/07

PATENT
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Amendments to the Drawings

The attached drawing sheets includes changes to Figure 1 and a replacement Figure 2. These sheets, which include Figure 1 and Figure 2, replacesthe original drawing sheets including Figure 1 and Figure 2.

In Figure 1, the reference numeral 99 was added to represent a video crossbar. Moreover, Figure 1 has been amended to include the text "FIG. 1" and to remove the designations "1/1".

Attachment: Replacement Sheet

REMARKS

In the Office Action, the Examiner noted that claims 1-19 are pending in the application and that claims 1-19 stand rejected. By this response, claim 8 is cancelled, claims 20 and 21 are added and claims 1, 5 and 6 are amended to more clearly define the invention of the Applicant. All other claims are unamended by this response.

In view of the amendments presented above and the following discussion, the Applicant respectfully submits that none of these claims now pending in the application are rendered obvious under the provisions of 35 U.S.C. § 103. In addition, the Applicant respectfully submits that all of these claims now pending in the application are patentable under the provisions of 35 U.S.C. § 101. Thus the Applicant believes that all of these claims are now in allowable form.

Rejections

A. 35 U.S.C. § 101

The Examiner rejected the Applicant's claims 1 and 11 under 35 U.S.C. § 101 because the invention is directed to non-statutory subject matter.

With respect to statutory product claims, products may either be machines, manufactures, or compositions or matter. A machine is "a concrete thing, consisting of parts or of certain devices and combinations of devices" (Burr v. Duryee, 68 U.S. (1 Wall) 531, 570 (1863)). If a claim defines a useful machine or manufacture by identifying the physical structure of the machine or manufacture in terms of its hardware or hardware and software combination, it defines a statutory product (see, e.g., Lowry, 32 F.3d at 1583, 32 USPQ2d at 1034-35; Warmerdam, 33 F.3d at 1361-62, 31 USPQ2d at 1760; MPEP §2106(IV)(B)(2)(a)). Accordingly, since Claim 1 and Claim 11 are directed to a machine consisting of combinations of devices (e.g., video hardware components, video computers, a control circuit), the Applicant respectfully submits that Claim 1 and Claim 11 recite statutory subject matter.

More specifically, Claims 1 and 11 recite an arrangement comprising various tangible elements, inter alia "video hardware components implemented for

a dedicated purpose and exclusively usable for said dedicated purpose", "video computers, each being non-dedicated to a specific purpose and capable of performing a plurality of functions that are dynamically changeable independent of one another, depending on a current need to be filled by the video computers" and "a control circuit for assigning tasks to the video computers, depending on the current need". Claim one further specifies the dedicated video hardware components as being specifically implemented for those uses which are computer-intensive and/or require a large bandwidth, that is to say the dedicated video hardware components can only perform the task they are designed for. The person ordinarily skilled in the art is fully aware that specific tasks in video processing can be performed by a specific hardware arrangement. Specific hardware arrangements need less clock cycles for performing the operations they are designed for.

One reason for this enhanced processing speed is the fact that specific computing hardware arrangements expect data having a specific format at their respective input and the processing circuitry itself is adapted to perform computing operations on data having this specific format. For example, a multiplier for multiplying two 16-bit binary numbers may be adapted to perform the multiplication within a single clock cycle. A multi-purpose computer that is not adapted to multiplying 16-bit binary numbers may need substantially more clock cycles, depending on the algorithm that is implemented for performing multiplication operations. A common multiplication algorithm may consist in repeatedly adding the multiplicand a number of times determined by the factor. Assuming that each adding operation takes one clock cycle the number of clock cycles required for performing the multiplication may vary substantially, which is unacceptable for real-time video processing. Further, a multi-purpose computer may not be adapted to dealing with the result of the multiplication of two 16-bit binary numbers, which may be up to 32 bit long. In this case the multi-purpose computer may need additional clock cycles for addressing additional registers for storing intermediate results while performing the multiplication.

Claims 1 and 11 further specify the video computers as being capable of performing processing video signals in real-time. The person ordinarily skilled in

the art is fully aware that certain video processing tasks require less computer power and can be performed in a multi-purpose computer. One example for this is subtracting or adding two 16-bit binary numbers. As is generally known any general purpose processor includes an adder, which can also be used for subtracting.

Apart from that, claims 1 and 11 do not relate to any specific video hardware component or any specific video computer. Rather, claims 1 and 11 relate to an arrangement of two arrangements for at least one of mixing and processing one or more video signals, each of which accommodates dedicated video hardware components as well as multi-purpose video computers. The invention advantageously allows for assigning a video computer of a first arrangement to be used by the second arrangement. This is a more flexible approach compared with the prior art, which can reduce the number of video computers required, since a video computer that is not used in one arrangement can be assigned a task in another arrangement which either does not have a video computer at all or the video computer of which is a ready performing a different task. The invention as claimed in claims 1 and 11 may even comprise a first arrangement of one or more video computers and dedicated video hardware located in one place and a second arrangement of one or more video computers and dedicated video hardware located in another place, which locations are linked, for example by a wideband bus system. Such an arrangement was unknown prior to the priority date of the pending patent application. It is submitted that the arrangement as claimed in claims 1 and 11 represent an apparatus that is a concrete and tangible result. For achieving this tangible result the nature of any of the video computers or dedicated video hardware is irrelevant, and the person ordinarily skilled in the art can produce the arrangement as claimed in claims 1 and 11 without undue experimentation. Thus, reconsideration of the rejection is respectfully requested.

B. 35 U.S.C. § 103

The Examiner rejected claims 1-19 under 35 U.S.C. § 103(a) as being unpatentable over Daniel Beaulier et al. (U.S. Patent No. 5,162,904, hereinafter "Beaulier"). The rejection is respectfully traversed.

Beaulier teaches and discloses a digital video switching apparatus that has a matrix switch which receives a plurality of input video signals and connects certain of the input video signals as outputs thereof. The input video signals can be externally supplied or can be internally generated by video processors within the switching apparatus. Signals internally generated within the switching apparatus include signals that are mixed or are modified by wipe effects. In Beaulier, a plurality of displays is associated with the switching apparatus for displaying the functions and the status of the respective switches and effect generators. Further, a control device is associated with the switching apparatus. In Beaulier, several switching apparatuses may be daisy-chained, in which case the control devices may be linked via a network connection such that a control device associated with one switching apparatus may take control of another switching apparatus. However, the video signal can only promote through the system of daisy-chained switching apparatus in one direction.

The Applicant submits that Beaulier absolutely fails to teach, suggest or make obvious a video computer that is non-dedicated to a special purpose. The Applicant has carefully reviewed the specification of Beaulier and in particular the description of figure 14, in which elements 110 and 170 are described, which are considered video computers by the Examiner.

The description of figure 14 of Beaulier beginning in column 11 in line 39 mentions a "high level computer 110". The high level computer 110 communicates with a control panel 102 and a plurality of communication ports. However, the high-level computer 110 does not perform any video processing the nature of which is determined by a software which is loaded into the high-level computer depending on the required type of processing as taught and claimed by the Applicant. In contrast to the invention of the Applicant, in Beaulier the high-level computer is used for controlling dedicated components connected to the plurality of communication ports.

That is, in the description of figure 14 in column 12, lines 15 to 19 of Beaulier a display computer 170 is mentioned. In the following paragraphs of the specification more details of the nature of the display computer 170 are disclosed. Column 12, lines 29 to 31 state that "left and right display units 180(a-b) are controlled by and communicate with the display computer 170 via communication bus 106(k-l)." Further, a keyboard is associated with each display unit comprising a plurality of keys, whose function can be reprogrammed by the display computer 170 (column 12, lines 33 to 35). The person skilled in the art, when reading the specification, immediately recognizes that the display computer 170 is used in the control of the video switching apparatus disclosed by Beaulier. However, the person skilled in the art also immediately recognizes that the display computer 170 is not used in the sense of processing a video signal, the type of processing depending on a software loaded into the computer as taught and claimed by the Applicant.

In fact, Beaulier only mentions dedicated video processing elements throughout the whole specification, for example mix effect units 20 and 22 and Down Stream Keyer 24 (column 4, lines 15 to 18). Each mix effect unit includes a wipe generator 30 (column 7, line 13) and a mixer (column 7, line 24). None of the wipe generator and the mixer is defined by software downloaded to the mix effect unit or can be used for other purposes than the purpose stated in the name of the element, that is in this case generating a wipe effect or mixing.

The Applicant respectfully submits that the statement made by the Examiner that "each computer controls a processor for executing independent functions, e.g. floating point processing, a video signal processing" (column 13, lines 45 to 55; column 4 to 5, lines 62 to 10) does not constitute a link to video signal processing and has no such support in the text portions indicated. That is, none of the elements cited by the Examiner and considered non-dedicated video computers actually is a non-dedicated video computer in the sense of claim 1 or as taught in the Applicant's specification. A person skilled in the art does not even find a motivation in Beaulier to use a multi-purpose video computer capable of

dynamically changing the type of video processing in the switcher as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1.

Even further, not only does Beaulier fail to teach, suggest or make obvious a control circuit, as conceded by the Examiner, but rather all required elements of the Applicant's claims including dedicated video hardware components are not taught or disclosed by Beaulier. Further, the fact that Beaulier mentions a control panel for controlling the video switching apparatus does not anticipate or render obvious a control circuit as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1. More specifically, the control panel mentioned by Beaulier is not suitable for controlling a first and a second arrangement for at least one of mixing and processing one or more video signals to use a non-dedicated video computer of the respective other arrangement as taught and claimed by the Applicant. As described above, Beaulier does not even provide a motivation to use a non-dedicated video computer for dynamically assigning different types of video processing.

The Applicant further submits that the mere fact that the system taught by Beaulier is a "networked system" does not render obvious the concept of sharing a non-dedicated video computer between two arrangements for at least one of mixing and processing one or more video signals as taught and claimed by at least the Applicant's claim 1. The networking disclosed in Beaulier instead pertains to control operations only, while the video signal is daisy-chained unidirectionally from an output to an input (see figure 1 elements 16a and 16b connected from output to input by a 75Ohm connection). For assigning a non-dedicated video computer inside system chassis 16a of figure 1 to system chassis 16b of figure 1 at least a video signal connection in the opposite direction would have to be added. Only then would it be possible to pass the video signal to be processed from system chassis 16a to system chassis 16b, performing the required operation in system chassis 16b, and passing the processed video signal back to system chassis 16a, as it is taught and claimed in the arrangement as claimed in at least the Applicant's claim 1. That is, Beaulier fails to disclose this necessary feature, although the control network disclosed in Beaulier would allow for remote control of one system chassis from the control panel of the other system chassis. Therefore,

even if Beaulier discloses networked control of two or more system chassis, no motivation at all is given to provide a coupling between two or more video processing arrangements for sharing non-dedicated video computers amongst the two or more video processing arrangements as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1. In fact, since Beaulier fails to teach non-dedicated video computers at all, no such need for sharing processing elements between the two or more arrangements arises since the each of the switching apparatuses disclosed in Beaulier contains all desired video signal processing stages, no need for cross-linking two or more of the switching apparatus exists.

Therefore, the Applicant submits that for at least the reasons recited above independent claim 1 is not rendered obvious by the teachings of Beaulier and, as such, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

Likewise independent claim 11 recites similar relevant features as those recited in claim 1. As such, the Applicant submits that for at least the reasons recited above, independent claim 11 is also not rendered obvious by the teachings of Beaulier and, as such, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

Furthermore, dependent claims 2-7, 9-10, 11-19 and new claims 20 and 21 depend either directly or indirectly from independent claims 1 and 11 and recite additional features therefor. As such and for at least the reasons set forth herein, the Applicant submits that dependent claims 2-7, 9-10, 11-19 and new claims 20 and 21 are also not rendered obvious by the teachings of Beaulier at least because claims 2-7, 9-10, 11-19 and new claims 20 and 21 depend either directly or indirectly from independent claims 1 and 11. Therefore the Applicant submits that dependent claims 2-7, 9-10, 11-19 and new claims 20 and 21 also fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

Conclusion

As such, the Applicant submits that none of the claims presently in the application are obvious under the provisions of 35 U.S.C. § 103. Furthermore, the Applicant submits that all of the claims are patentable under the provisions of 35 35 U.S.C. § 101. Consequently, the Applicant believes that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion, it is respectfully requested that the Examiner telephone the undersigned.

No fee is believed due. However, if a fee is due, please charge the additional fee to Deposit Account No. 07-0832.

Respectfully submitted,
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